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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,959	11/13/2003	Jose E. Garza	GB920030037US1	2896
7590 IBM Corporation IP Law Department 11400 Burnet Road Austin, TX 78758		08/07/2007	EXAMINER ZHE, MENG YAO	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/713,959

Applicant(s)

GARZA ET AL.

Examiner

MengYao Zhe

Art Unit

2109

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Claims 1-35 are presented for examination.

#### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-19, 35 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

i) Claims 1-19 are rejected under 35 U.S.C. 101 because the claimed invention are directed to system claim, but appearing to be comprised of software alone without claiming associated computer hardware required for execution (i.e. claim 1 recites "an asynchronous messaging system comprising means for..." while no hardware is such as a processor is included.). The following link on the World Wide Web is for the United States Patent And Trademark Office (USPTO) policy on 35 U.S.C. §101.

[http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101\\_20051026.pdf](http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf)

ii) Claim 35 is rejected because the claimed invention claims for a computer program which is comprised of software alone without claiming associated computer hardware required for execution.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following claim languages are unclear and indefinite:

i) Claim 1, lines 3-4, it is uncertain as to what is meant by “the average depth of a queue”. <i.e. how is the depth measured? Is it by the number of messages in the queue?>

line 5-6, it is uncertain as to what is meant by “controlling the number of server...” <i.e. is it increasing or decreasing the number of servers? Or is it limiting the access to the servers?>

line 7, it is not clearly understood what the relationship is between “predetermined thresholds” and “average queue depth”. <i.e. are the thresholds used for the average queue depth?>

Claims 16, 17, 20 and 35 have the same deficiencies as claim 1 above.

- ii) Claim 2, line 3, it is not clearly indicated as to what the relationship is among “first predetermined threshold”, “predetermined threshold” (claim 1, line 7) and “average depth of queue” (line 3) <i.e. which one has the largest or smaller number?>

Claims 3 and 22 have the same deficiencies as claim 2 above.

- iii) Claim 2, line 4, claim 3, line 4, and claim 21, line 4, it is uncertain what is meant by “another entity start another server instance” <i.e. is there suppose to be a group of server instances that is originally present, and this another server instance is a server that is not yet present in the current group of servers? Where is the another entity located?>
- iv) Claim 4, line 4, it is uncertain what the relationship is between the “initialization queue” and the “queue” in claim 3, line 5 <i.e. is the initialization queue a different queue from the queue in claim 3?>

Claim 23 has the same deficiencies as claim 4 above.

- v) Claim 5, line 2-3, it is uncertain what the relationship is between “a plurality of queues” and “the queue” mentioned in claim 1, line 6 <i.e. is the queue found in claim 1 part of this plurality of queues?>. It is also unclear what the relationship is between a “plurality of queues” and “the initialization queue” in claim 4, line 4 < i.e. is the initialization queue part of this plurality of queues?>. It

is unclear what the relationship is between “a plurality of queues” and “the server” in line 4 <i.e. does each server get its own queue for storing incoming messages?>

Claim 24 exhibits the same deficiencies as claim 5 above.

vi) Claim 6, line 2-3, it is unclear what the relationship is between “the first threshold” and “the first predetermined threshold” found in claim 2, line 3 <i.e. are they the same threshold?>.

line 3, it is not clearly indicated as to how the apparatus is “resetting the average queue depth” <i.e. does it automatically generate a number that is less than the first predetermined threshold?>

Claim 25 has the same deficiencies as claim 6 above.

vii) Claim 7, lines 4-5, it is not clearly indicated as to what the relationship is among “second predetermined threshold”, “predetermined threshold” (claim 1, line 7) and “average depth of queue” (line 4) <i.e. which one has the largest or smaller number?>; It is also unclear why this is a second threshold considering there is no first threshold mentioned in claims 1 and 7.

Line 3, it is unclear what the relationship is between “a server instance” and the “server instances” in claim 1, line 5 < i.e. is the server instance to be terminated part of the server instances mentioned in claim 1?>.

viii) Claims 19, 26 have the same deficiencies as claim 7 above.

ix) Claim 8, line 3: It is unclear what the relationship is between “the second threshold” and “the second predetermined threshold” in claim 7, line 4-5 <i.e. are they the same threshold or just resetting to zero?>.

line 3, it is not clearly indicated as to how the apparatus is “resetting the average queue depth” <i.e. does it automatically generate a number that is greater than the first predetermined threshold?>

Claim 27 has the same deficiencies as claim 8 above.

x) Claim 9, line 3, it is unclear what is meant by “spoofing the server instance into believing that there are no more messages on the queue...”, how it is done and what triggers this step <i.e. is apparatus changing the number of messages in the queue? Is it taking away some number of messages from the queue?>.

Claim 28 has the same deficiencies as claim 9 above.

xi) Claim 10, lines 3-4, claim 29, lines 3-4, it is uncertain what is meant by “another entity terminate the server instance” <i.e. what is this another entity? is it another server? A controller that is different from the server instance? Where is it located?>

xii) Claim 11, line 3, claim 12, line 3, claim 30, line 3, claim 31, line 3, it is unclear as to what is meant by “server instances that can be active” <i.e. does being active mean that the server is always receiving messages and processing

its current messages already assigned to it? Or does it mean that it is not completely shut down?>

xiii) Claim 13, line 3, claim 32, line 3, it is unclear what is meant by “average depth”. <i.e. is it an average of queue depth over a set amount of samples of queue depth taken over a period of time?>

xiv) Claim 14, lines 3-4, claim 33, lines 3-4, it is unclear what is meant by “a time weighted mean average queue depth” <i.e. is there a specific equation for this?>.

xv) Claim 15, lines 3-4, claim 34, lines 3-4: it is unclear what is meant by “an exponentially smoothed average queue depth” <i.e. is there a specific equation for this?>.

xvi) Claim 17, lines 5-6, it is unclear what the relationship is between the “additional server instances” and “the server instance” in line 2 <is the server instance alone responsible for controlling the number of additional server instances?>

xvii) Claim 18, line 3: it is unclear what the relationship is between “an additional server instance” and “the additional server instances” in claim 17, lines 5-6. It is also unclear who is responsible for “spawning and additional server instance” <i.e. is the server instance mentioned in claim 17 responsible for spawning the additional server?>



***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 11-17, 20, 30-35 are rejected under 35 U.S.C 102(b) as being anticipated by Abbott et al., Patent No. 6,314,463 (hereafter Abbott).

8. As per claims 1, 16, 17, 20, and 35, Abbott teaches the invention as claimed including an apparatus for workload balancing in an asynchronous messaging system comprising:

means for obtaining the average depth of a queue of messages (*Col 25, lines 65-Col 26, line 2*)

means for controlling the number of server instances retrieving messages from the queue based on the average queue depth and one or more predetermined thresholds (*Col 17, lines 25-32, 43-49; Col 17, lines 60-col 18, line 20: The manager can cease directing requests to a particular server and eventually cause it to shut down, thus controlling the number of servers available. Col 25, lines 25-35, 46-29; Col 25, lines 65-Col 26, line 3: Abbott teaches the load value can be based on one or a combination of various metrics that indicate load value which includes the average of*

*requests and using a threshold. These two combined corresponds to using average queue depth and predetermined threshold to control server numbers.)*

9. As per claims 11 and 30, Abbott teaches setting a maximum number of server instances that can be active at any one time (Col 6, lines 15-20: the number of servers depend on the host capacity. Thus the host capacity inherently defines maximum number of servers instances allowed.).

10. As per claims 12 and 31, Abbott teaches setting a minimum number of server instances that should be active at any one time (Col 6, line 15-20: in the instance that only one server is allowed, this corresponds to the minimum number of servers).

11. As per claims 13 and 32, Abbott teaches wherein the step of obtaining the average queue depth comprises: calculating the queue's average depth (Col 25, lines 65-67).

12. As per claims 14 and 33, Abbott teaches wherein the step of calculating comprises: calculating a time weighted mean average queue depth (Col 25, lines 46-29; Col 26, lines 1-10).

13. As per claims 15 and 34, Abbott teaches wherein the step of calculating comprises: calculating an exponentially smoothed average queue depth (Col 24, line 25-Col 25, line15).

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 2-10, 18-19, 21-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abbott et al., Patent No. 6,314,463 (hereafter Abbott) in view of Noland et al., Patent NO. 7,080,378 (hereafter Noland).

16. As per claims 2, 18 and 21, Abbott teaches using an average queue depth. Abbott does not specifically teach responsive to determining that the average queue depth exceeds a first predetermined threshold, starting another server instance for retrieving messages from the queue.

17. However, Noland teaches responsive to determining that the queue depth exceeds a first predetermined threshold, starting another server instance for retrieving messages from the queue (Fig 5, Col 5, lines 5-36).

18. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Abbott with Noland's responsive to determining

that the queue depth exceeds a first predetermined threshold, starting another server instance for retrieving messages from the queue to improve the bottleneck of Abbott's system, because it allows the initiation of another sever to serve incoming requests when all other servers are overloaded.

19. As per claims 3 and 22, Abbott teaches using an average queue depth. Abbott does not specifically teach responsive to determining that the average queue depth exceeds a first predetermined threshold, for requesting that another entity start a server instance for retrieving messages from the queue. However, Noland teaches responsive to determining that the queue depth exceeds a first predetermined threshold, for requesting that another entity start a server instance for retrieving messages from the queue (Col 5, lines 5-36 and Fig 5: the controller software corresponds to another entity).

20. As per claims 4 and 23, Noland teaches wherein the controlling step comprises: placing a trigger message on an initialization queue (Col 4, lines 5-10; The command sequence corresponds to the initialization queue), the trigger message being destined for the other entity, the trigger message indicating to the other entity that a server instance is to be started (Col 3, lines 55-Col 4 line 30: the command corresponds to the trigger message.).

21. As per claims 5 and 24, Noland teaches wherein the method is for use in a messaging system having a plurality of queues and the trigger message includes

information regarding (i) which server to instantiate; and (ii) which queue the newly instantiated server instance should retrieve messages from. (Col 3, lines 55-Col 4 line 30; Col 5, lines 5-36: each server cluster has its own queue.)

22. As per claims 6 and 25, Abbott teaches using an average queue depth. Abbott does not teach responsive to determining that the first threshold has been exceeded, resetting the average queue depth to less than the first threshold. However, Noland teaches responsive to determining that the first threshold has been exceeded, resetting the queue depth to less than the first threshold. (Col 5, lines 24-47: After the additional server is added and processing of requests starts by the new server, the average queue depth will inherently decrease to below the first threshold.)

23. As per claims 7, 19 and 26, Abbott teaches using an average queue depth. Abbott does not specifically teach wherein the controlling step: terminating a server instance when the average queue depth falls below a second predetermined threshold. However, Noland teaches wherein the controlling step: terminating a server instance when the queue depth falls below a second predetermined threshold (Fig 5; last sentence of the abstract, Col 5, lines 40-57: The deactivation delimiter corresponds to the second threshold).

24. As per claims 8 and 27, Noland teaches responsive to determining that the average queue depth is below the second threshold, resetting the average queue depth to be greater than the second threshold (Col 5, lines 48-57: Once the previously activate server is deactivated, it is no longer in service, inherently, requests starts to accumulate

at a higher rate in the queue. Therefore, the average queue depth eventually becomes greater than the second threshold.).

25. As per claims 9 and 28, Abbott teaches wherein the step of terminating a server instance comprises at least one of: (i) spoofing the server instance into believing that there are no more messages on the queue for it to process; (ii) spoofing the server instance into believing that a queue manager, controlling the queue, is shutting down; (iii) spoofing the server instance into believing that operator intervention has requested that the server instance shuts down; and (iv) requesting that the server instance shuts down (Col 17, lines 60-65).


26. As per claims 10 and 29, Noland teaches wherein the step of terminating a server instance comprises: requesting that another entity terminate the server instance (Col 5, lines 50-57: The control software corresponds to another entity).

### ***Conclusion***

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MengYao Zhe whose telephone number is 571-272-6946. The examiner can normally be reached on Monday Through Friday, 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached at 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
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